



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/584,786

06/28/2006

Alain Ravex

Serie 6486

4981

40582

7590

09/14/2009

AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

09/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,786	<b>Applicant(s)</b> RAVEX ET AL.	
	<b>Examiner</b> William C. Doerrler	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6-28-2008</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement filed 6-28-2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Rejections - 35 USC § 103***

Claims 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peschka (4,386,309) in view of Moiseev (5,226,299) and Lak et al (2004/0256395). Peschka discloses applicants' basic inventive concept, a hydrogen storage installation in a vehicle with an insulated liquid hydrogen tank (1), a pipeline for extracting liquid hydrogen (8), a circuit (10) for removing gaseous hydrogen and feeding the gaseous hydrogen to a fuel cell (14) which is used to power a refrigeration system (23) which cools a radiation shield (metal screen) in the hydrogen tank, substantially as claimed with the exception of using the gaseous nitrogen to cool the shield and using closed cell polyurethane as an insulator. Moiseev shows metal screen 2 cooled by vaporizing cryogen (through inlet 7), with the screen between insulation layers (see line 46 of column 4 and line 31 of column 6). Lack et al show closed cell polyurethane(paragraph

Art Unit: 3744

32) on both sides of a metal support (paragraph 33), to be old in the cryogenic liquid container art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Moiseev and Lak et al to modify the hydrogen storage installation of Peschka by using a metal screen cooled by exiting vapor and insulated with closed cell polyurethane to provide efficient long term storage of liquid hydrogen. In regard to claims 11-13, figure 8 of Moiseev shows multiple structurally stable vapor cooled screens, with one located inside the other. In regard to claims 15 and 16, figures 1 and 10 of Moiseev show the formation of the screen using multiple plates with troughs formed in the plates.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peschka (4,386,309) in view of Moiseev (5,226,299) and Lak et al (2004/0256395) as applied to claims 10-17 above, and further in view of Miyajima et al (2005/0173170) or Lechner (2004/0211192).

Peschka, as modified, discloses applicants' basic inventive concept, a hydrogen storage installation for a vehicle with a fuel cell to produce electricity for use within the vehicle, substantially as claimed with the exception of using the fuel cell to provide propulsion to the vehicle. Miyajima et al (with fuel cell 11 powering propulsion motor 31) and Lechner (paragraph 11) each show this feature to be old in the fuel cell art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of either Miyajima et al or Lechner to modify the vehicle mounted hydrogen powered fuel cell of Peschka by using the fuel cell to provide propulsion for the vehicle to provide efficient, clean propulsion.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. DeHaan, Chandler et al, Kotcharian and Schoenman show cryogenic storage tanks with thermal shields.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William C Doerrler/  
Primary Examiner, Art Unit 3744

WCD